

## The Honorable Robert J. Bryan

**UNITED STATES DISTRICT COURT  
FOR THE WESTERN DISTRICT OF WASHINGTON  
AT TACOMA**

LAWRENCE HARTFORD; DOUGLAS MITCHELL; BRETT BASS; SPORTING SYSTEMS VANCOUVER, INC.; SECOND AMENDMENT FOUNDATION, INC.; AND FIREARMS POLICY COALITION, INC.,

**Plaintiffs,**

V.

BOB FERGUSON, in his official capacity as Washington State Attorney General, et al.,

### Defendants.

| NO. 3:23-cv-05364-RJB

DECLARATION OF LOUIS KLAREVAS,  
PHD, IN SUPPORT OF STATE  
DEFENDANTS' OPPOSITION TO  
MOTION FOR PRELIMINARY  
INJUNCTION

## I. PROFESSIONAL QUALIFICATIONS

1. I am a security policy analyst and, currently, Research Professor at Teachers College, Columbia University, in New York. I am also the author of the book *Rampage Nation*, one of the most comprehensive studies on gun massacres in the United States.<sup>1</sup>

2. I am a political scientist by training, with a B.A. from the University of Pennsylvania and a Ph.D. from American University. During the course of my nearly 25-year career as an academic, I have served on the faculties of George Washington University, the City University of New York, New York University, and the University of Massachusetts. I have also served as Defense Analysis Research Fellow at the London School of Economics and Political

<sup>1</sup> Louis Klarevas, *Rampage Nation: Securing America from Mass Shootings* (2016).

1 Science and as United States Senior Fulbright Scholar in Security Studies at the University of  
 2 Macedonia.

3. My current research examines the nexus between American public safety and gun  
 4 violence, including serving as an investigator in a study funded by the National Institutes of  
 5 Health that focuses on reducing intentional shootings at elementary and secondary schools.

6. In addition to having made over 100 media and public-speaking appearances, I  
 7 am the author or co-author of more than 20 scholarly articles and over 70 commentary pieces. In  
 8 2019, my peer-reviewed article on the effectiveness of restrictions on LCMs in reducing high-  
 9 fatality mass shootings that result in six or more victims killed was published in the *American*  
 10 *Journal of Public Health*.<sup>2</sup> This study found that jurisdictions with LCM bans experienced  
 11 substantially lower gun massacre incidence and fatality rates when compared to jurisdictions not  
 12 subject to similar bans. Despite being over 3 years old now, this study continues to be one of the  
 13 highest-impact studies in academia. It was recently referred to as “the perfect gun policy study,”  
 14 in part due to the study’s “robustness and quality.”<sup>3</sup>

5. Since January 1, 2019, I have been deposed, testified in court, or testified by  
 6 declaration in the following cases (all in federal court), listed alphabetically by state:

17 **California – Central District**

18 *Rupp v. Bonta* 8:17-cv-00746-JLS-JDE

19 **California – Eastern District**

20 *Wiese v. Bonta* 2:17-cv-00903-WBS-KJN

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22       <sup>2</sup> Louis Klarevas, et al., “The Effect of Large-Capacity Magazine Bans on High-Fatality Mass Shootings,”  
 109      *American Journal of Public Health* 1754 (2019), available at  
 23      <https://ajph.aphapublications.org/doi/full/10.2105/AJPH.2019.305311> (last accessed February 11, 2023).

24       <sup>3</sup> Lori Ann Post and Maryann Mason, “The Perfect Gun Policy Study in a Not So Perfect Storm,” 112  
 112      *American Journal of Public Health* 1707 (2022), available at  
 25      <https://ajph.aphapublications.org/doi/full/10.2105/AJPH.2022.307120> (last accessed February 11, 2023).  
 According to Post and Mason, “Klarevas et al. employed a sophisticated modeling and research design that was  
 more rigorous than designs used in observational studies. Also, they illustrated the analytic steps they took to rule  
 out alternative interpretations and triangulate their findings, for example examining both state bans and federal bans.  
 They helped build the foundation for future studies while overcoming the limitations of previous research.” *Id.*

1	<b>California – Southern District</b>	
2	<i>Duncan v. Bonta</i>	17-cv-1017-BEN-JLB
3	<i>Jones v. Bonta</i>	19-cv-01226-L-AHG
4	<i>Miller v. Bonta</i>	3:19-cv-1537-BEN-JBS
5	<i>Nguyen v. Bonta</i>	3:20-cv-02470-WQH-MDD
6	<b>Colorado</b>	
7	<i>Gates v. Polis</i>	1:22-cv-01866-NYW-SKC
8	<b>Connecticut</b>	
9	<i>National Association for Gun Rights v. Lamont</i>	3:22-cv-01118-JBA
10	<b>Hawaii</b>	
11	<i>National Association for Gun Rights v. Lopez</i>	1:22-cv-404-DKW-RT
12	<b>Illinois – Northern District</b>	
13	<i>Viramontes v. Cook County</i>	1:21-cv-04595
14	<i>National Association for Gun Rights v. Highland Park</i>	22-cv-04774
15	<i>Herrera v. Raoul</i>	1:23-cv-00532
16	<b>Illinois – Southern District</b>	
17	<i>Harrel v. Raoul*</i>	23-cv-141-SPM
18	<i>Langley v. Kelly*</i>	23-cv-192-SPM
19	<i>Barnett v. Raoul*</i>	23-cv-209-SPM
20	<i>Federal Firearms Licensees of Illinois v. Pritzker*</i>	23-cv-215-SPM
21	<i>Kenneally v. Raoul</i>	3:23-cv-50039
22	<b>Massachusetts</b>	
23	<i>National Association for Gun Rights v. Campbell</i>	1:22-cv-11431-FDS
24	<b>Oregon</b>	
25	<i>Oregon Firearms Federation v. Kotek†</i>	2:22-cv-01815-IM
26	<i>Fitz v. Rosenblum†</i>	3:22-cv-01859-IM
	<i>Eyre v. Rosenblum†</i>	3:22-cv-01862-IM
	<i>Azzopardi v. Rosenblum†</i>	3:22-cv-01869-IM

1      **Washington – Eastern District**

2      *Brumback v. Ferguson*

1:22-cv-03093-MKD

3      **Washington – Western District**

4      *Sullivan v. Ferguson*

3:22-cv-5403-DGE

5      *Hartford v. Ferguson* (Present Case)

3:23-cv-05364-RJB

6      \*Non-Consolidated Cases on the Same Briefing Schedule / †Consolidated Cases

7      6.      In 2021, I was retained by the Government of Canada in the following cases  
 8 which involved challenges to Canada's regulation of certain categories of firearms: *Parker and*  
 9 *K.K.S. Tactical Supplies Ltd. v. Attorney General of Canada*, Federal Court, Court File No.: T-  
 10 569-20; *Canadian Coalition for Firearm Rights, et al. v. Attorney General of Canada*, Federal  
 11 Court, Court File No.: T-577-20; *Hipwell v. Attorney General of Canada*, Federal Court, Court  
 12 File No.: T-581-20; *Doherty, et al. v. Attorney General of Canada*, Federal Court, Court File  
 13 No.: T-677-20; *Generoux, et al. v. Attorney General of Canada*, Federal Court, Court File No.:  
 14 T-735-20; and *Eichenberg, et al. v. Attorney General of Canada*, Federal Court, Court File No.:  
 15 T-905-20. I testified under oath in a consolidated court proceeding involving all six cases in the  
 16 Federal Court of Canada.

17      7.      I have also submitted declarations in the following state court cases: *People of*  
 18 *Colorado v. Sgaggio*, District Court, El Paso County, Colorado, 2022M005894 (Criminal); and  
 19 *Guardian Arms v. Inslee*, Superior Court, Grant County, Washington, 23-2-00377-13 (Civil).

20      8.      A true and correct copy of my current curriculum vitae is attached as **Exhibit A**  
 21 to this Declaration.

22      9.      I have been retained by the State Defendants to render expert opinions in this  
 23 case. I am being compensated at a rate of \$480/hour for my work on this Declaration, \$600/hour  
 24 for any testimony (including deposition testimony) in connection with this matter, and \$120/hour  
 25 for travel required to provide testimony.

## II. OPINIONS

2       10. It is my professional opinion, based upon my analysis of the data reviewed herein,  
3 that (1) in terms of individual acts of intentional criminal violence, mass shootings presently  
4 pose the deadliest threat to the safety of American society in the post-9/11 era, and the problem  
5 is growing nationwide; (2) mass shootings involving assault weapons, on average, have resulted  
6 in a substantially larger loss of life than similar incidents that did not involve assault weapons;  
7 (3) mass shootings resulting in double-digit fatalities are relatively modern phenomena in  
8 American history, often related to the use of large-capacity magazines and assault weapons; (4)  
9 assault weapons are used by private citizens with a far greater frequency to perpetrate mass  
10 shootings than to stop mass shootings; (5) handguns, as opposed to rifles (let alone rifles that  
11 qualify as assault weapons), are the most commonly owned firearms in the United States; and  
12 (6) jurisdictions that restrict assault weapons experience fewer mass shooting incidents and  
13 fatalities, per capita, than jurisdictions that do not restrict assault weapons. Based on these  
14 findings, it is my opinion that restrictions on assault weapons have the potential to save lives by  
15 reducing the frequency and lethality of mass shootings.<sup>4</sup>

<sup>4</sup> For purposes of this Declaration, I employ two prominent definitions of mass shootings from the field of firearm violence research. “High-fatality mass shootings” (also referred to as “gun massacres”) are shootings resulting in 6 or more fatalities, not including the perpetrator(s), regardless of location or underlying motive. “Mass public shootings” are shootings resulting in 4 or more fatalities, not including the perpetrator(s), occurring largely in a public setting and not undertaken in pursuit of an underlying criminal objective (e.g., robbery, illicit trafficking, organized crime, gang violence, or domestic violence). Unfortunately, long-term, publicly-available, exhaustive data on all mass shootings resulting in 4 or more fatalities, not including the perpetrator(s), regardless of location or underlying motive, are presently not available. This limits comprehensive scholarly analyses over a long period of time to the above two types of mass shooting violence: high-fatality mass shootings and mass public shootings. The data on high-fatality mass shootings is from a data set that I maintain and continuously update. This data set is reproduced in **Exhibit B**. The data set of mass public shootings that I analyzed is publicly available from The Violence Project. The creation of this data set was funded by the National Institute of Justice, which is part of the U.S. Department of Justice. In addition to basic variables, such as incident dates and locations, casualty counts, and information on offenders, The Violence Project data set also identifies whether an assault weapon was used to perpetrate a mass public shooting. The Violence Project data set is available at <https://www.theviolenceproject.org/mass-shooter-database> (last accessed December 27, 2022). The Violence Project data set is reproduced in **Exhibit C**. Unless stated otherwise, all of the data used to perform original analyses and to construct tables and figures in this Declaration are drawn from **Exhibits B and C**.

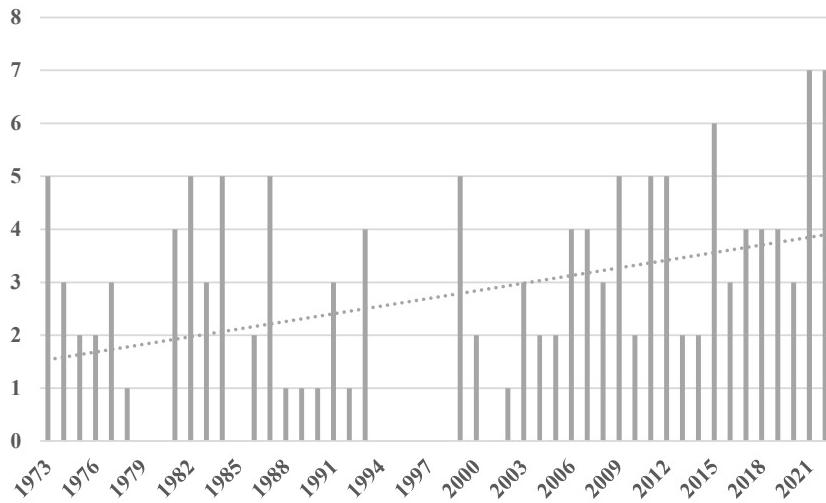
1     **A. Mass Shootings Are a Growing Threat to Public Safety**

2         11. Examining mass-casualty acts of violence in the United States points to two  
 3 disturbing patterns. First, as demonstrated in Table 1, the deadliest individual acts of intentional  
 4 criminal violence in the United States since the terrorist attack of September 11, 2001, have all  
 5 been mass shootings. Second, as displayed in Figures 1-4, the problem of mass shooting violence  
 6 is on the rise. To put the increase over the last 50 years into perspective, between the ten-year-  
 7 period of 1973-1982 and the ten-year-period of 2013-2022, the average population of the United  
 8 States increased approximately 47%. However, the number of people killed in high-fatality mass  
 9 shootings and mass public shootings between these two ten-year-periods, respectively, reflect  
 10 178% and 523% increases. In other words, the rise in mass shooting violence has far outpaced  
 11 the rise in national population. The obvious takeaway from these patterns and trends is that mass  
 12 shootings pose a significant—and growing—threat to American public safety.

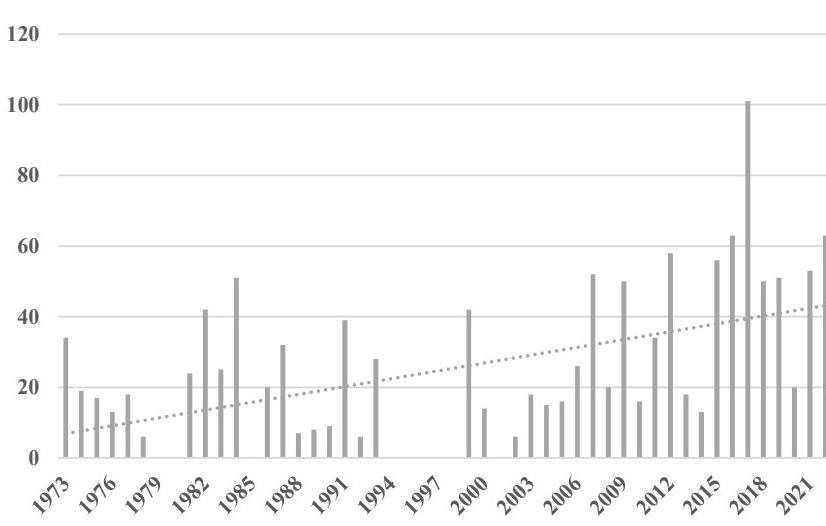
13           **Table 1. The Deadliest Acts of Intentional Criminal Violence in the U.S. since 9/11**

	<b>Deaths</b>	<b>Date</b>	<b>Location</b>	<b>Type of Violence</b>
1	60	October 1, 2017	Las Vegas, NV	Mass Shooting
2	49	June 12, 2016	Orlando, FL	Mass Shooting
3	32	April 16, 2007	Blacksburg, VA	Mass Shooting
4	27	December 14, 2012	Newtown, CT	Mass Shooting
5	25	November 5, 2017	Sutherland Springs, TX	Mass Shooting
6	23	August 3, 2019	El Paso, TX	Mass Shooting
7	21	May 24, 2022	Uvalde, TX	Mass Shooting

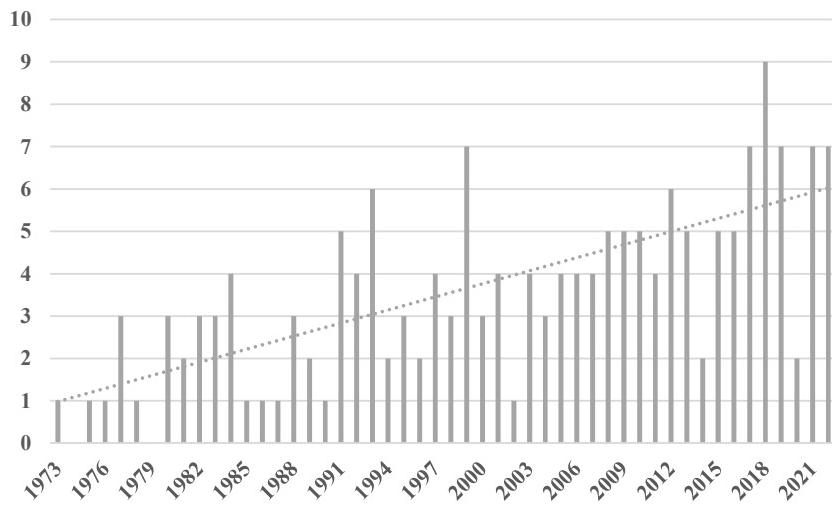
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**Figure 1. Annual Trends in High-Fatality Mass Shooting Incidents, 1973-2022**

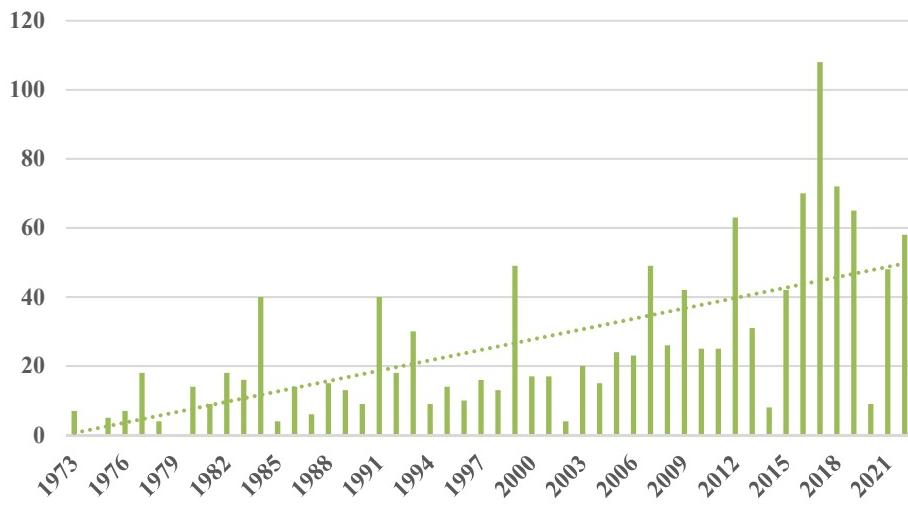
Note: The dotted line is a linear trendline. A linear trendline is a straight line that captures the overall pattern of the individual data points. When there is a positive relationship between the x-axis and y-axis variables, the trendline moves upwards from left to right. When there is a negative relationship between the x-axis and y-axis variables, the trendline moves downwards from left to right.

**Figure 2. Annual Trends in High-Fatality Mass Shooting Fatalities, 1973-2022**

Note: The dotted line is a linear trendline. A linear trendline is a straight line that captures the overall pattern of the individual data points. When there is a positive relationship between the x-axis and y-axis variables, the trendline moves upwards from left to right. When there is a negative relationship between the x-axis and y-axis variables, the trendline moves downwards from left to right.

**Figure 3. Annual Trends in Mass Public Shooting Incidents, 1973-2022**

Note: The dotted line is a linear trendline. A linear trendline is a straight line that captures the overall pattern of the individual data points. When there is a positive relationship between the x-axis and y-axis variables, the trendline moves upwards from left to right. When there is a negative relationship between the x-axis and y-axis variables, the trendline moves downwards from left to right.

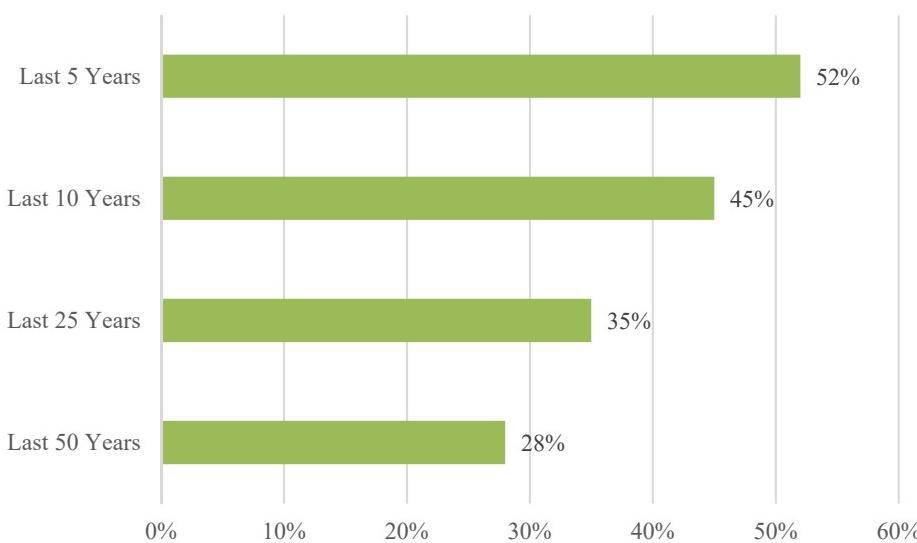
**Figure 4. Annual Trends in Mass Public Shooting Fatalities, 1973-2022**

Note: The dotted line is a linear trendline. A linear trendline is a straight line that captures the overall pattern of the individual data points. When there is a positive relationship between the x-axis and y-axis variables, the trendline moves upwards from left to right. When there is a negative relationship between the x-axis and y-axis variables, the trendline moves downwards from left to right.

1           **B. The Use of Assault Weapons Is a Major Factor in the Rise of Mass Shooting  
2 Violence**

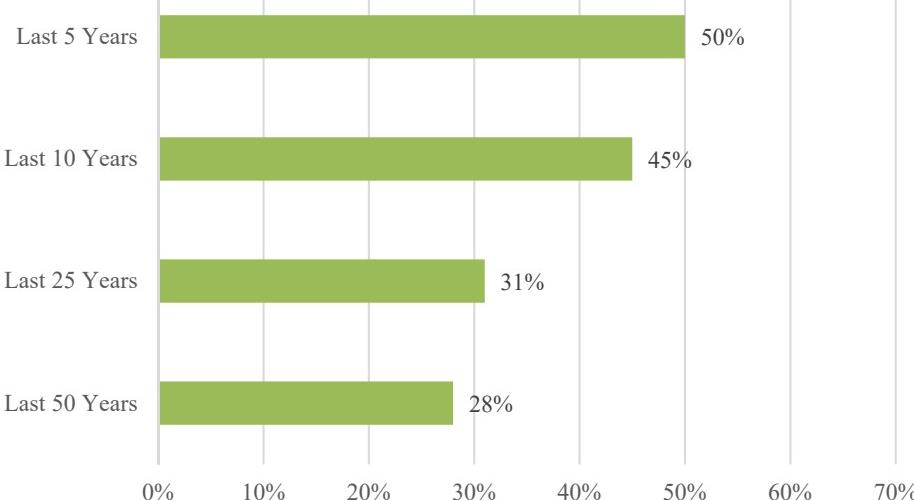
3           12. In addition to showing that the frequency and lethality of mass shootings are on  
4 the rise nationally, the data point to another striking pattern: the use of assault weapons in the  
5 commission of mass shootings has grown in vast proportions. In both high-fatality mass  
6 shootings and mass public shootings, assault weapons have been used with increased frequency.  
7 As shown in Figures 5 and 6, the pattern is particularly marked of late, with at least half of high-  
8 fatality mass shooting incidents and mass public shooting incidents in the last five years  
9 involving assault weapons. A similar, albeit more pronounced, pattern is found when examining  
10 fatalities in the last five years, with approximately 6-in-10 high-fatality mass shooting deaths  
11 and mass public shooting deaths resulting from incidents involving assault weapons, as shown  
12 in Figures 7 and 8. These trends clearly demonstrate that, among mass shooters, there is a  
13 growing preference for using assault weapons to perpetrate their attacks.

14           **Figure 5. Share of High-Fatality Mass Shootings Involving Assault Weapons**



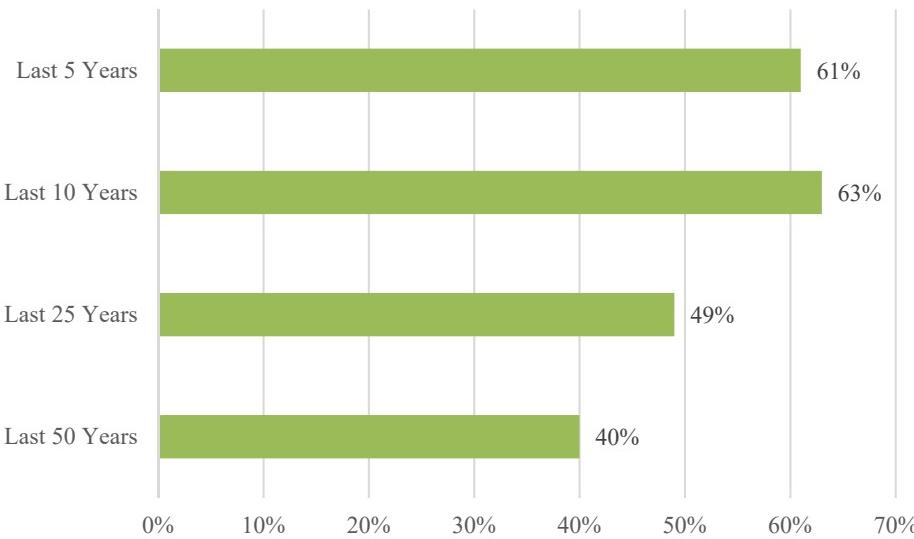
24           Note: The calculations in Fig. 5 exclude two high-fatality mass shootings (3/15/2020, Moncure,  
25 NC, 6 deaths; and 9/7/2020, Aguanga, CA, 7 deaths) in which the firearms used are unknown.  
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1                   **Figure 6. Share of Mass Public Shootings Involving Assault Weapons**



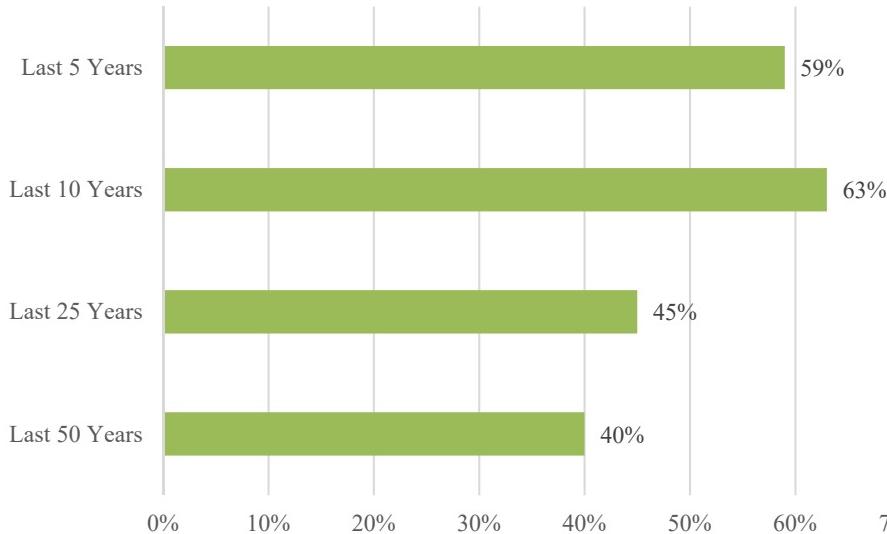
12                  Note: The calculations in Fig. 6 exclude one mass public shooting (2/6/17, Yazoo City, MS, 4  
13                  deaths) in which the firearms used are unknown.

14                   **Figure 7. Share of High-Fatality Mass Shooting Deaths Resulting from Incidents  
15                  Involving Assault Weapons**



25                  Note: The calculations in Fig. 7 exclude two high-fatality mass shootings (3/15/2020, Moncure,  
26                  NC, 6 deaths; and 9/7/2020, Aguanga, CA, 7 deaths) in which the firearms used are unknown.

1           **Figure 8. Share of Mass Public Shooting Deaths Resulting from Incidents Involving  
2           Assault Weapons**



12           Note: The calculations in Fig. 8 exclude one mass public shooting (2/6/17, Yazoo City, MS, 4  
13           deaths) in which the firearms used are unknown.

14           13.       The growing use of assault weapons to carry out mass shootings is an obvious  
15           theme reflected in the data. The *disproportionate* resort to assault weapons by perpetrators of  
16           mass shootings is another clear theme. The National Sport Shooting Foundation (NSSF)  
17           estimates that there are approximately 24.4 million “modern sporting rifles”—which is a firearm  
18           industry term for AR-15-platform and AK-47-platform firearms—in civilian hands as of the end  
19           of 2020.<sup>5</sup> Based on federal government data, it appears that modern sporting rifles make up  
20           approximately 5.3% of all firearms in circulation in American society (24.4 million out of an  
21           estimated 461.9 million firearms).<sup>6</sup> And, in all likelihood, the NSSF’s estimate of 24.4 million

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<sup>5</sup> NSSF, *Commonly Owned: NSSF Announces over 24 Million MSRs in Circulation*, July 20, 2022,  
23           available at <https://www.nssf.org/articles/commonly-owned-nssf-announces-over-24-million-msrs-in-circulation>  
24           (last accessed January 3, 2023).

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<sup>6</sup> The 5.3% ownership rate for modern sporting rifles was calculated using NSSF and Bureau of Alcohol,  
26           Tobacco, Firearms, and Explosives (ATF) data. The NSSF estimates that there are approximately 24.4 million  
27           modern sporting rifles in civilian hands as of the end of 2020 (when the most recent data is available). In a 2020  
28           report that captured data through the end of 2018, the NSSF estimated that there were 433.9 million total firearms  
29           in civilian circulation. NSSF, *Industry Intelligence Reports: Firearm Production in the United States with Firearm  
30           Import and Export Data, 2020*, at 18, available at [https://www.nssf.org/wp-content/uploads/2020/11/IIR-2020-  
32           Firearms-Production-v14.pdf](https://www.nssf.org/wp-content/uploads/2020/11/IIR-2020-<br/>31           Firearms-Production-v14.pdf) (last accessed January 3, 2023). According to ATF data, in 2019 and 2020, an

modern sporting rifles is an over-estimation because it appears to include firearms in the possession of domestic law enforcement agencies and firearm retailers (as well as possibly prohibited owners).<sup>7</sup> But, even using this estimate, if assault weapons were used in proportion to the percentage of modern sporting rifles in circulation, approximately 5% of all mass shootings would involve assault weapons. However, as seen in Figures 5-6 above, civilian ownership rates and mass-shooter use rates are not similar. Indeed, the current difference is approximately ten-fold, with the rate at which assault weapons are now used to commit mass murder far outpacing the rate at which modern sporting rifles circulate amongst civilians in the United States.

14. Another pattern that stands out when examining the relationship between assault weapons use and mass shooting violence reflects the disproportionately greater lethality associated with the use of assault weapons. For instance, returning to the aforementioned list of the seven deadliest individual acts of intentional criminal violence in the United States since the coordinated terrorist attack of September 11, 2001, besides all seven of the incidents being mass shootings, six of the seven incidents (86%) involved assault weapons, as shown in Table 2. When mass shooting fatalities are examined on a rising scale, the relationship between assault weapons use and higher death tolls is striking. In the past 50 years, assault weapons have been used in 28% of all high-fatality mass shootings and mass public shootings. However, as the fatality threshold of such incidents increase, so too does the share of incidents involving assault weapons. For instance, assault weapons were used in 80% of all mass public shootings resulting in more than 24 deaths and 100% of all high-fatality mass shootings resulting in more than 40 deaths

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additional 28.0 million firearms entered the civilian stock nationwide. ATF, *National Firearms Commerce and Trafficking Assessment: Firearms in Commerce*, 2022, at 181, 188, 193, available at <https://www.atf.gov/firearms/docs/report/national-firearms-commerce-and-trafficking-assessment-firearms-commerce-volume/download> (last accessed January 3, 2023). Assuming these figures reported by the NSSF and the ATF are accurate, this brings the estimated number of firearms in civilian circulation through the end of 2020 to approximately 461.9 million. The ownership rate is calculated as follows: 24.4 million modern sporting rifles divided by 461.9 million total firearms equals 5.3%.

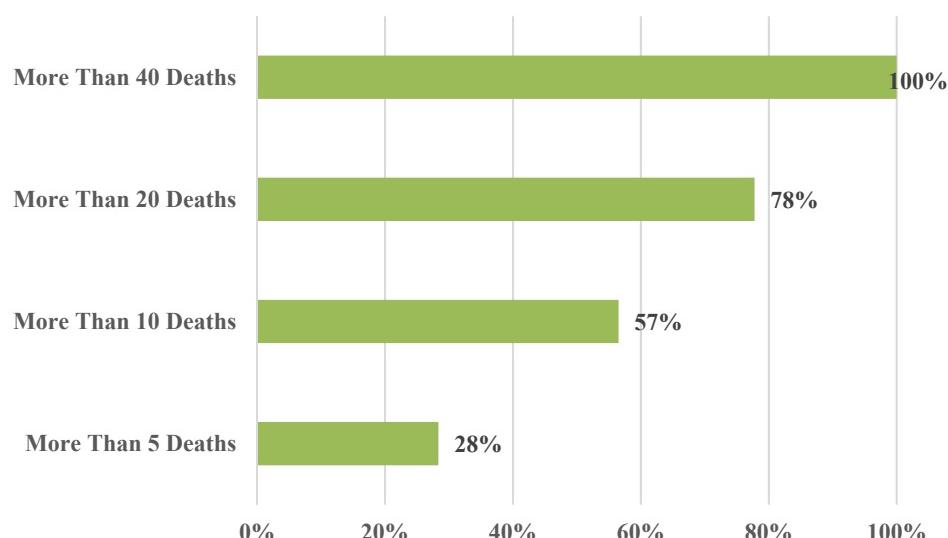
<sup>7</sup> ATF, 2022, *supra* note 6, at 12; NSSF, 2020, *supra* note 6, at 2-3.

(Figures 9-10). As the data show, there is an association between assault weapons use and mass shooting lethality.

**Table 2. The Use of Assault Weapons in the Deadliest Acts of Intentional Criminal Violence in the U.S. since 9/11**

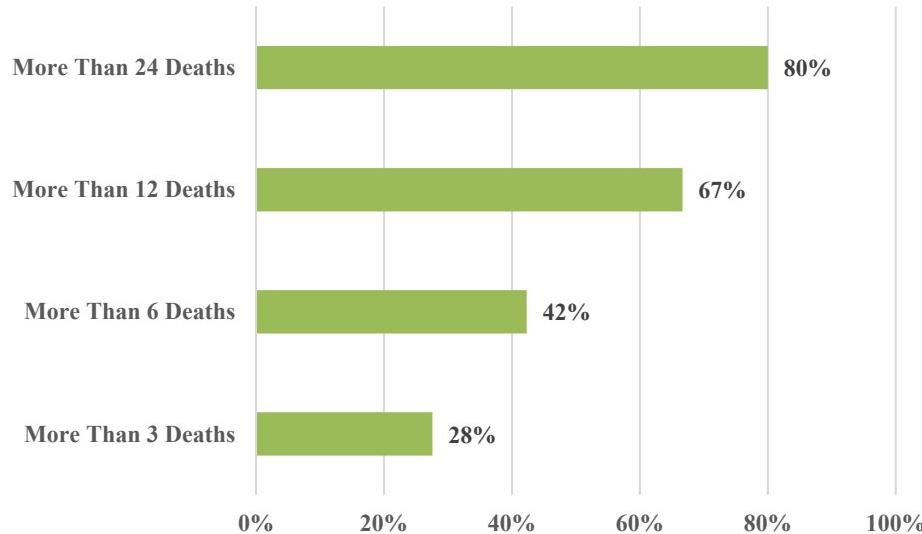
Deaths	Date	Location	Involved Weapon(s)	Assault
60	October 1, 2017	Las Vegas, NV	✓ (AR-15)	
49	June 12, 2016	Orlando, FL	✓ (AR-15)	
32	April 16, 2007	Blacksburg, VA		
27	December 14, 2012	Newtown, CT	✓ (AR-15)	
25	November 5, 2017	Sutherland Springs, TX	✓ (AR-15)	
23	August 3, 2019	El Paso, TX	✓ (AK-47)	
21	May 24, 2022	Uvalde, TX	✓ (AR-15)	

**Figure 9. Percentage of High-Fatality Mass Shootings Involving Assault Weapons by Fatality Threshold, 1973-2022**



Note: The calculations in Fig. 9 exclude two high-fatality mass shootings (3/15/2020, Moncure, NC, 6 deaths; and 9/7/2020, Aguanga, CA, 7 deaths) in which the firearms used are unknown.

1           **Figure 10. Percentage of Mass Public Shootings Involving Assault Weapons by Fatality**  
 2           **Threshold, 1973-2022**



12           Note: The calculations in Fig. 10 exclude one mass public shooting (2/6/17, Yazoo City, MS, 4  
 13           deaths) in which the firearms used are unknown.

14           15. Of the 134 high-fatality mass shootings in that last 50 years in which the type of  
 15           firearm used is known, 38 involved assault weapons, resulting in 491 deaths. The average death  
 16           toll for these 38 incidents is 12.9 fatalities per shooting. By contrast, the average death toll for  
 17           the 96 incidents in which it is known assault weapons were not used (which resulted in 749  
 18           fatalities) is 7.8 fatalities per shooting (Table 3). Of the 174 mass public shootings in that last 50  
 19           years in which the type of firearm used is known, 48 involved assault weapons, resulting in 496  
 20           deaths. The average death toll for these 48 incidents is 10.3 fatalities per shooting. By contrast,  
 21           the average death toll for the 126 incidents in which it is known assault weapons were not used  
 22           (which resulted in 759 fatalities) is 6.0 fatalities per shooting (Table 4). In other words, in the  
 23           last 50 years, the use of assault weapons in high-fatality mass shootings and mass public  
 24           shootings has resulted, respectively, in 65% and 72% increases in average fatalities per incident  
 25           (Tables 3 and 4). In the last 10 years, the differences in average fatality rates per incident are  
 26           even more pronounced—more than double: 8.0 versus 16.7 deaths per high-fatality mass

shooting and 6.2 versus 12.8 deaths per mass public shooting. These amount, respectively, to 109% and 106% increases in the average death tolls, associated with the use of assault weapons (Tables 3 and 4).

16. This review of the data suggests that assault weapons are force multipliers when used to perpetrate mass shootings.

**Table 3. The Average Death Tolls Associated with the Use of Assault Weapons in High-Fatality Mass Shootings in the U.S., 1973-2022**

	Average Death Toll for Incidents That Did Not Involve the Use of Assault Weapons	Average Death Toll for Incidents That Did Involve the Use of Assault Weapons	Percent Increase in Average Death Toll Associated with the Use of Assault Weapons
<b>Last 50 Years</b>	7.8 Deaths	12.9 Deaths	65%
<b>Last 10 Years</b>	8.0 Deaths	16.7 Deaths	109%

Note: The calculations in Table 3 exclude two high-fatality mass shootings (3/15/2020, Moncure, NC, 6 deaths; and 9/7/2020, Aguanga, CA, 7 deaths) in which the types of firearms used are unknown.

**Table 4. The Average Death Tolls Associated with the Use of Assault Weapons in Mass Public Shootings in the U.S., 1973-2022**

	Average Death Toll for Incidents That Did Not Involve the Use of Assault Weapons	Average Death Toll for Incidents That Did Involve the Use of Assault Weapons	Percent Increase in Average Death Toll Associated with the Use of Assault Weapons
<b>Last 50 Years</b>	6.0 Deaths	10.3 Deaths	72%
<b>Last 10 Years</b>	6.2 Deaths	12.8 Deaths	106%

Note: The calculations in Table 4 exclude one mass public shooting (2/6/17, Yazoo City, MS, 4 deaths) in which the types of firearms used are unknown.

1           **C. Double-Digit-Fatality Mass Shootings Are a Post-World War II Phenomenon in**  
 2           **American History And They Often Involve Assault Weapons**

3       17. I have also examined the historical occurrence and distribution of mass shootings  
 4 resulting in 10 or more victims killed since 1776 (Table 5 and Figure 11).<sup>8</sup> In terms of the origins  
 5 of this form of extreme gun violence, there is no known occurrence of a mass shooting resulting  
 6 in double-digit fatalities during the 173-year period between the nation's founding in 1776 and  
 7 1948. The first known mass shooting resulting in 10 or more deaths occurred in 1949. In other  
 8 words, for 70% of its 247-year existence as a nation, the United States did not experience a mass  
 9 shooting resulting in double-digit fatalities, making them relatively modern phenomena in  
 10 American history.<sup>9</sup>

11       18. After the first such incident in 1949, 17 years passed until a similar mass shooting  
 12 occurred in 1966. The third such mass shooting then occurred nine years later, in 1975. And the  
 13 fourth such incident occurred seven years after, in 1982. Basically, the first few mass shootings  
 14 resulting in 10 or more deaths did not occur until the post-World War II era. Furthermore, these  
 15 first few double-digit-fatality incidents occurred with relative infrequency, although the temporal  
 16 gap between these first four incidents shrank with each event (Table 5 and Figure 12).<sup>10</sup>

17       ///

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22       <sup>8</sup> I searched for firearm-related "murders," using variations of the term, setting a minimum fatality  
 23 threshold of 10 in the Newspaper Archive online newspaper repository, available at [www.newspaperarchive.com](http://www.newspaperarchive.com)  
 24 (last accessed October 2, 2022). The Newspaper Archive contains local and major metropolitan newspapers dating  
 25 back to 1607. Consistent with other analyses on mass murder, incidents of large-scale, inter-group violence such as  
 26 mob violence, rioting, combat or battle skirmishes, and attacks initiated by authorities acting in their official capacity  
 were excluded.

25       <sup>9</sup> Using the Constitution's effective date of 1789 as the starting point would lead to the conclusion that, for  
 26 68% of its 234-year existence as a nation, the United States did not experience a mass shooting resulting in double-  
 digit fatalities.

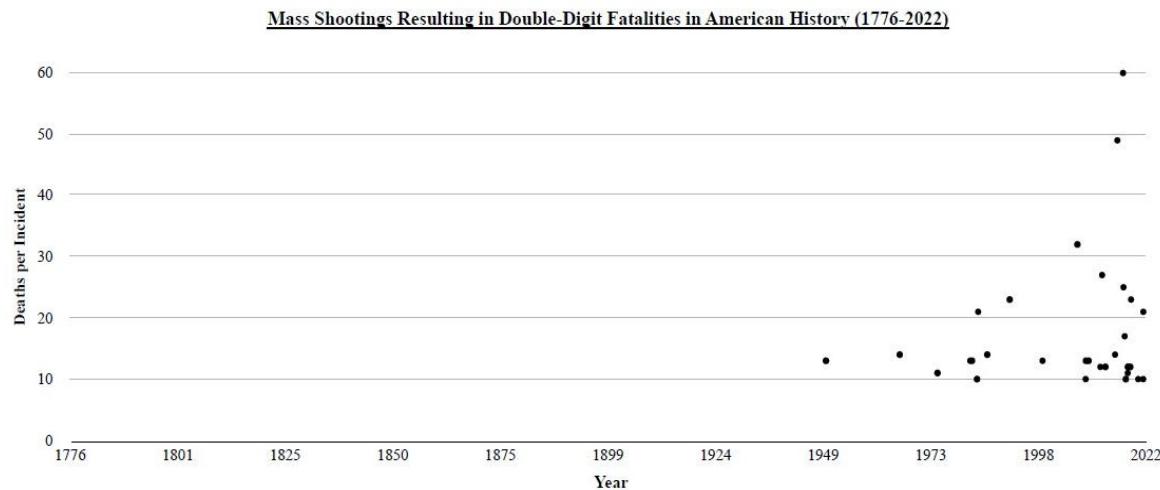
26       <sup>10</sup> Figures 11–12 are reproduced in larger form as **Exhibit D** of this Declaration.

1                   **Table 5. Mass Shootings Resulting in Double-Digit Fatalities in American History**  
 2                   **(1776-2022)**

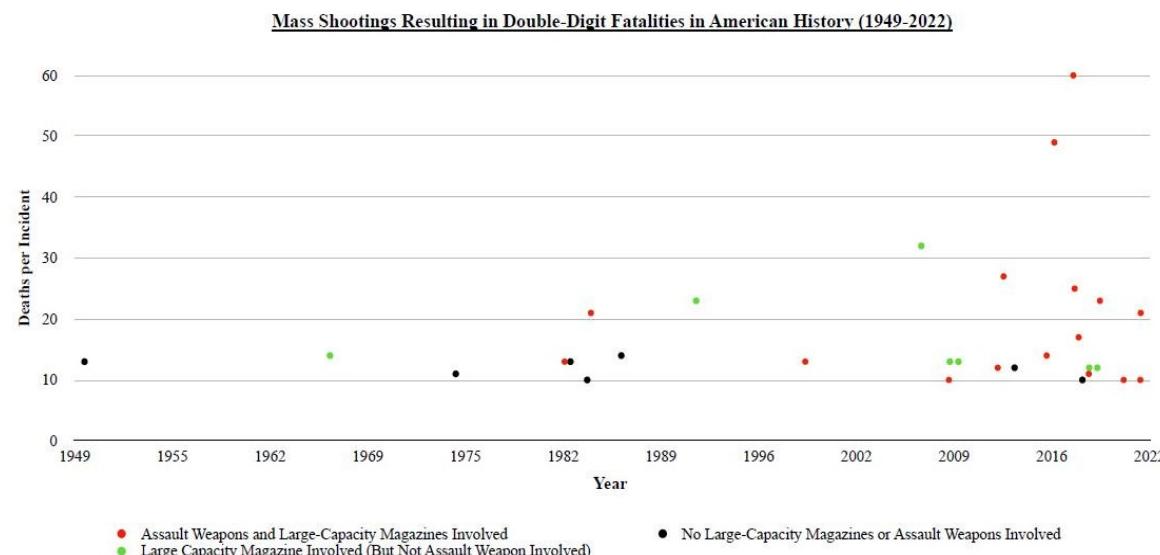
				Involved Assault Weapon(s)	Involved Large- Capacity Magazine(s)
5	1	9/6/1949	Camden, NE	N	N
6	2	8/1/1966	Austin, TX	N	Y
7	3	3/30/1975	Hamilton, OH	N	N
8	4	9/25/1982	Wilkes-Barre, PA	Y	Y
9	5	2/18/1983	Seattle, WA	N	N
10	6	4/15/1984	Brooklyn, NY	N	N
11	7	7/18/1984	San Ysidro, CA	Y	Y
12	8	8/20/1986	Edmond, OK	N	N
13	9	10/16/1991	Killeen, TX	N	Y
14	10	4/20/1999	Littleton, CO	Y	Y
15	11	4/16/2007	Blacksburg, VA	N	Y
16	12	3/10/2009	Geneva County, AL	Y	Y
17	13	4/3/2009	Binghamton, NY	N	Y
18	14	11/5/2009	Fort Hood, TX	N	Y
19	15	7/20/2012	Aurora, CO	Y	Y
20	16	12/14/2012	Newtown, CT	Y	Y
21	17	9/16/2013	Washington, DC	N	N
22	18	12/2/2015	San Bernardino, CA	Y	Y
23	19	6/12/2016	Orlando, FL	Y	Y
24	20	10/1/2017	Las Vegas, NV	Y	Y
25	21	11/5/2017	Sutherland Springs, TX	Y	Y
26	22	2/14/2018	Parkland, FL	Y	Y
27	23	5/18/2018	Santa Fe	N	N
28	24	10/27/2018	Pittsburgh, PA	Y	Y
29	25	11/7/2018	Thousand Oaks, CA	N	Y
30	26	5/31/2019	Virginia Beach, VA	N	Y
31	27	8/3/2019	El Paso, TX	Y	Y
32	28	3/22/2021	Boulder, CO	Y	Y
33	29	5/14/2022	Buffalo, NY	Y	Y
34	30	5/24/2022	Uvalde, TX	Y	Y

23 Note: Death tolls do not include perpetrators. An incident was coded as involving an assault  
 24 weapon if at least one of the firearms discharged was defined as an assault weapon in (1) the  
 25 1994 federal Assault Weapons Ban; (2) the statutes of the state where the gun massacre occurred;  
 26 or (3) a legal or judicial declaration issued by a state official. An incident was coded as involving  
 a large-capacity magazine if at least one of the firearms discharged was armed with a detachable  
 ammunition-feeding device holding more than 10 bullets.

1      **Figure 11. Mass Shootings Resulting in Double-Digit Fatalities in American History**  
2      **(1776-2022)**



12      **Figure 12. Mass Shootings Resulting in Double-Digit Fatalities in American History**  
13      **(1949-2022)**



1       19. The distribution of double-digit-fatality mass shootings changes in the early  
 2 1980s, when five such events took place in a span of just five years (Table 5 and Figure 12). This  
 3 timeframe also reflects the first time that assault weapons were used to perpetrate mass shootings  
 4 resulting in 10 or more deaths: the 1982 Wilkes-Barre, PA, massacre (involving an AR-15 rifle  
 5 and resulting in 13 deaths) and the 1984 San Ysidro, CA, massacre (involving an Uzi pistol and  
 6 resulting in 21 deaths). But this cluster of incidents was followed by a 20-year period in which  
 7 only two double-digit-fatality mass shootings occurred (Figure 12). This period of time from  
 8 1987-2007 correlates with three important federal firearms measures: the 1986 Firearm Owners  
 9 Protection Act, the 1989 C.F.R. “sporting use” importation restrictions, and the 1994 Federal  
 10 Assault Weapons Ban.

11       20. It is well-documented in the academic literature that, after the Federal Assault  
 12 Weapons Ban expired in 2004, mass shooting violence increased substantially.<sup>11</sup> Mass shootings  
 13 that resulted in 10 or more deaths were no exception, following the same pattern. In the 56 years  
 14 from 1949 through 2004, there were a total of 10 mass shootings resulting in double-digit  
 15 fatalities (a frequency rate of one incident every 5.6 years). In the 18 years since 2004, there have  
 16 been 20 double-digit-fatality mass shootings (a frequency rate of one incident every 0.9 years).  
 17 In other words, the frequency rate has increased over six-fold since the Federal Assault Weapons  
 18 Ban expired (Table 5 and Figure 12). (The 1994 Federal Assault Weapons Ban and its impact on  
 19 mass shooting violence is discussed in further detail in Section F of this Declaration.)

20       21. Over three-quarters of mass shootings resulting in 10 or more deaths involved  
 21 assault weapons and/or LCMs. As also shown in the analyses of mass shootings in Section B,  
 22

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23       <sup>11</sup> See, for example, Klarevas, *Rampage Nation*, *supra* note 1 (Relevant Excerpt Attached as **Exhibit E**);  
 24 Klarevas, et al., *The Effect of Large-Capacity Magazine Bans on High-Fatality Mass Shootings*, *supra* note 2  
 25 (Attached as **Exhibit F**); Charles DiMaggio, et al., *Changes in US Mass Shooting Deaths Associated with the 1994-*  
 26 *2004 Federal Assault Weapons Ban: Analysis of Open-Source Data*, 86 Journal of Trauma and Acute Care Surgery  
 11 (2019) (Attached as **Exhibit G**); Lori Post, et al., *Impact of Firearm Surveillance on Gun Control Policy:*  
*Regression Discontinuity Analysis*, 7 JMIR Public Health and Surveillance (2021) (Attached as **Exhibit H**); and  
 Philip J. Cook and John J. Donohue, *Regulating Assault Weapons and Large-Capacity Magazines for Ammunition*,  
 328 JAMA, September 27, 2022 (Attached as **Exhibit I**).

1 death tolls in double-digit-fatality mass shootings are related to the use of firearms technologies  
 2 like assault weapons that, in terms of mass shootings, serve as force multipliers.

3 **D. Assault Weapons Are Almost Never Used by Private Citizens in Self-Defense during  
 4 Active Shootings**

5       22. An important question that, until now, has gone unanswered is: Are assault  
 6 weapons used as frequently to stop mass shootings as they are to perpetrate them? As shown  
 7 above in Section B, assault weapons have been used in approximately one-third of mass  
 8 shootings in the past 25 years (Figures 5-6). And in the past five years, the share of mass  
 9 shootings that have involved assault weapons has risen to approximately half (Figures 5-6).

10      23. The Federal Bureau of Investigation (FBI) has been documenting active shooter  
 11 incidents since 2000.<sup>12</sup> According to the FBI, active shootings are violent attacks that involve  
 12 “one or more individuals actively engaged in killing or attempting to kill people in a populated  
 13 area.”<sup>13</sup> A simple way to conceptualize active shooter incidents is to think of them as attempted  
 14 mass shootings. As part of its analysis of attempted mass shootings, the FBI identifies incidents  
 15 that involved armed civilians using their personal firearms to intervene, regardless of whether  
 16 the interventions were successful in stopping the attacks and/or neutralizing the perpetrator(s).

17      24. In the 23 years between January 1, 2000, and December 31, 2022, the FBI has  
 18 identified 456 active shootings occurring in the United States. Out of these 456 active shooter  
 19 incidents, 18 incidents (3.9%) involved defensive gun uses (DGUs) by civilians, excluding law  
 20

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21           <sup>12</sup> All of the information in this section, including definitions and data, are publicly available from the FBI.  
 22 See FBI, *Active Shooter Safety Resources*, available at <https://www.fbi.gov/how-we-can-help-you/safety-resources/active-shooter-safety-resources> (last accessed May 4, 2023).

23           <sup>13</sup> FBI, *Active Shooter Incidents in the United States in 2022*, April 2023, at 1, available at  
<https://www.fbi.gov/file-repository/active-shooter-incidents-in-the-us-2022-042623.pdf/view> (last accessed May 4,  
 24 2023). The FBI adds, “Implicit in this definition is the shooter’s use of one or more firearms. The *active* aspect of  
 25 the definition inherently implies the ongoing nature of the incidents, and thus the potential for the response to affect  
 26 the outcome.” *Id.* (emphasis in original). In addition to the report on incidents in 2022, the FBI has published seven  
 other reports on active shooter incidents covering the following seven time-periods: 2000-2013, 2014-2015, 2016-  
 2017, 2018, 2019, 2020, and 2021. All of these reports are available at the FBI’s Active Shooter Safety Resources  
 website, *supra* note 12.

enforcement or armed security.<sup>14</sup> Of these 18 DGUs, the firearm used by an armed private citizen intervening was identifiable in 17 incidents; 14 involved handguns and the remaining three involved long guns (one shotgun, one bolt-action rifle, and one assault rifle).<sup>15</sup> In other words, out of the 17 incidents where an armed civilian intervened and it was possible to identify the DGU firearm, only one incident (5.9%) involved an assault weapon.<sup>16</sup> Within the broader context of all active shooter incidents, only one incident out of 456 in the past 23 years (0.2%) is known to have involved an armed civilian intervening with an assault weapon.<sup>17</sup>

25. The bottom line is that assault weapons are used by civilians with a far greater frequency to perpetrate mass shootings than to stop mass shootings.

#### E. Ownership Rates of “Modern Sporting Rifles” in the U.S.

26. As noted above in Para. 13, based on the most recent, publicly-available NSSF and federal government data, modern sporting rifles—such as AR- and AK-platform firearms—appear to make up approximately 5.3% of all firearms in circulation in American society (24.4

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<sup>14</sup> In 17 of the 18 DGU-involved active shooter incidents, there was an exchange of gunfire. For the one incident that did not involve an exchange of gunfire, the gun (a handgun) was used to detain the active shooter after the shooting had ceased. FBI, *supra* notes 12 and 13.

<sup>15</sup> All 14 DGU incidents that involved handguns also involved armed civilians who held valid concealed-carry permits or were legally carrying their handguns. *Id.* In 12 of these 14 incidents, details about the types of handguns used in self-defense were available in news media accounts or in news media photographs from the crime scene. In two of the 14 incidents, the use of concealed handguns was inferred based on details about the shooting reported in news media accounts. There is no evidence that either of these two DGU incidents involved an assault pistol.

<sup>16</sup> The FBI also identifies an incident in which an armed individual (a local firefighter) subdued and detained a school shooter, but there is no evidence that the armed firefighter drew his handgun during the incident. *Id.* Moreover, local authorities have refused to comment on whether the firefighter ever drew his handgun. See Carla Field, *Firefighter Was Armed During Takedown of Shooting Suspect, Sheriff Says*, WYFF, October 3, 2016, available at <https://www.wyff4.com/article/firefighter-was-armed-during-takedown-of-shooting-suspect-sheriff-says/7147424> (last accessed January 3, 2023). Adding this incident to the 17 DGU-involved incidents where the type of firearm was identifiable would mean that 5.6% (as opposed to 5.9%) of the active shooter incidents, where an armed civilian intervened, involved an assault weapon.

<sup>17</sup> FBI, *supra* notes 12 and 13. The one DGU that involved an assault weapon was the 2017 church massacre in Sutherland Springs, Texas. In that incident, an armed private citizen used an AR-15-style assault rifle to wound the perpetrator as he was attempting to flee the scene. While the perpetrator was still able to flee the scene despite being shot, minutes later, he crashed his vehicle trying to escape and then took his life with his own firearm before law enforcement could apprehend him. See Adam Roberts, *Man Who Shot Texas Gunman Shares His Story*, KHBS/KHOG, November 7, 2017, available at <https://www.4029tv.com/article/man-who-shot-texas-church-gunner-shares-his-story/13437943> (last accessed January 3, 2023).

1 million out of an estimated 461.9 million firearms), although this likely includes modern sporting  
 2 rifles possessed by law enforcement agencies, firearm retailers, and possibly prohibited  
 3 possessors (e.g., criminals).<sup>18</sup> Furthermore, in its most recent survey data (2022), the NSSF found  
 4 that civilian owners of modern sporting rifles own, on average, 3.8 such rifles, with 24% of these  
 5 owners possessing only one such rifle.<sup>19</sup> Based on this data, only 6.4 million gun owners—out

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6           <sup>18</sup> In addition to the NSSF's estimate that there are 24.4 million modern sporting rifles in civilian circulation  
 7 in the United States as of the end of 2020, the Plaintiffs draw on a survey conducted by William English to support  
 8 their estimates about the number of AR-15-style rifles in American society. Plaintiffs' Motion for Preliminary  
 9 Injunction, *Hartford, et al. v. Ferguson, et al.*, 3:23-cv-05364-RJB (W.D. Wash.), Dkt. # 10 at p. 9, citing  
 10 William English, *2021 National Firearms Survey: Updated Analysis Including Types of Firearms Owned*,  
 11 Unpublished Paper (May 13, 2022; Revised September 22, 2022), available at  
 12 [https://papers.ssrn.com/sol3/cf\\_dev/AbsByAuth.cfm?per\\_id=4283305](https://papers.ssrn.com/sol3/cf_dev/AbsByAuth.cfm?per_id=4283305) (last accessed March 7, 2023). According to  
 13 English, "about 24.6 million people" have owned "an AR-15 or similar styled rifle." However, in calculating his  
 14 estimated ownership rates, English notes that "we disregard the 0.3% that indicate owning over 100" AR-15 styled  
 15 rifles. Assuming English correctly estimates that 24.6 million people have owned an AR-15 or similarly styled rifle,  
 16 his survey found that approximately 74,000 people own over 100 such rifles. Moreover, English also reports that  
 17 1.3% of all AR-15 style rifle owners (approximately 320,000 people) own between 11 and 100 such rifles. Even if,  
 18 for the sake of argument, these 74,000 people all owned only 101 AR-15s and these additional 320,000 people all  
 19 owned 11 AR-15s—the lowest possible number in the range that they identified as best capturing the number of  
 20 AR-15 styled rifles they own—that would mean that, ***at the very least, approximately 11 million AR-15 styled rifles***  
***are concentrated in the hands of 1.6% of AR-15 owners.*** As a reminder, 11 million AR-15 style rifles is a  
 21 conservative estimate calculated using the absolute minimum numbers in the reported ranges of 11-to-100 and 101-  
 22 or-more. While the English survey is discussed in an unpublished academic paper that is publicly available online,  
 23 there are significant concerns with the study, which call into question all of the findings reported in the paper. For  
 24 instance, English does not cite any scholarship or authority that advises analysts to exclude certain respondents due  
 25 to the magnitude of their scaled responses. English also does not explain who "we" refers to in his paper, when  
 26 stating that data exclusions were made. But a natural set of questions follows. Was the decision to exclude certain  
 people and their responses from the analysis made by a group of people? If so, who were the people involved? And  
 what criteria did they use to determine what got included and what got excluded? None of the answers to these  
 questions can be answered from the publicly available paper relating to the survey. Arguably, the biggest problem  
 with the English survey (as reported in the unpublished paper) is that it appears to be in serious violation of the  
 Code of Professional Ethics and Practices of the American Association for Public Opinion Research (AAPOR). See  
 "AAPOR Code of Professional Ethics and Practices," April 2021 (Attached as **Exhibit J**). Among the ways that the  
 English survey seemingly runs afoul of AAPOR canons, it fails to identify the source of sponsorship funding and it  
 fails to fully disclose the measurement tools (Rules III.A.2-3). The former is vital to assuring that the survey was  
 not designed and conducted to further the political or economic interests of particular people or organizations. The  
 latter allows independent observers and researchers to assess if, among other factors, question order, question  
 wording, or answer options biased responses. The latter is also crucial to assuring that select findings were not  
 suppressed because they would, if publicized, undermine the agenda of the survey's sponsor(s). Without release of  
 the entire questionnaire and the full results, it cannot be confirmed that questions and corresponding responses were  
 not suppressed.

19 NSSF, *Modern Sporting Rifle: Ownership, Usage and Attitudes Toward AR- and AK-Platform Modern*  
 20 *Sporting Rifles*, Comprehensive Consumer Report, 2022, at 12, available at  
<https://www3.nssf.org/share/PDF/pubs/NSSF-MSR-Comprehensive-Consumer-Report.pdf> (last accessed January  
 21 16, 2023). While the NSSF, unlike the English survey, does not report whether respondents in its surveys of modern  
 22 sporting rifle owners happen to own more than 10, let alone more than 100, modern sporting rifles, NSSF has  
 23 detected a growing trend toward increased ownership of multiple modern sporting rifles. For instance, in its 2010  
 24

1 of an estimated 81 million Americans who own at least one personal firearm—own modern  
 2 sporting rifles.<sup>20</sup> In other words, less than 8% of all civilian gun owners in the United States own  
 3 modern sporting rifles.<sup>21</sup> In terms of the total population of the United States, estimated by the  
 4 Census Bureau to be approximately 333 million people in 2022, less than 2% of all Americans  
 5 own a modern sporting rifle.<sup>22</sup>

6       27. In deriving its estimates, the NSSF often relies on United States government data,  
 7 particularly ATF data.<sup>23</sup> According to the ATF, from 1986 through 2020 (which reflects the most  
 8 currently-available data), the civilian stock of firearms in the United States has been made up  
 9 predominantly of handguns.<sup>24</sup> As Figure 13 shows, handguns account for 50% of the civilian  
 10 stock of firearms, rifles account for 33%, and shotguns account for 17%.

11  
 12 survey, it found that 40% of modern sporting rifle owners owned only 1 modern sporting rifle and 60% owned  
 13 multiple modern sporting rifles, with the average number of modern sporting rifles owned being 2.6. In its 2013  
 14 survey, it found that 35% of modern sporting rifle owners owned only 1 modern sporting rifle and 65% owned  
 15 multiple modern sporting rifles, with the average number of modern sporting rifles owned increasing to 3.1. In its  
 16 most recent, 2021 survey, the NSSF found that 24% of modern sporting rifle owners owned only 1 modern sporting  
 17 rifle and 76% owned multiple modern sporting rifles, with the average number of modern sporting rifles owned  
 18 increasing yet again to 3.8. This speaks to a growing trend in which modern sporting rifles are being purchased by  
 19 gun owners who already own an modern sporting rifle, resulting in modern sporting rifles being concentrated,  
 20 relatively speaking, in the hands of those who already own modern sporting rifles. *Id.*

21       <sup>20</sup> The estimate that approximately 6.4 million gun owners possess what the NSSF considers to be modern  
 22 sporting rifles is calculated by dividing the 3.8 average number of such rifles that each modern sporting rifle owner  
 23 possesses into the 24.4 million such rifles estimated to be in civilian circulation. This calculation (24.4 million  
 24 divided by 3.8) equals 6.4 million. Based on survey data, 81 million American adults are estimated to own guns.  
 25 Andy Nguyen, *Proposed Assault Weapons Ban Won't Turn Gun Owners into Felons Overnight*, PolitiFact, The  
 26 Poynter Institute, August 3, 2022, available at <https://www.politifact.com/factchecks/2022/aug/03/instagram-posts/proposed-assault-weapons-ban-wont-turn-gun-owners/> (last accessed January 16, 2023).

27       <sup>21</sup> The finding that less than 8% of all gun owners possess modern sporting rifles is calculated by dividing  
 28 the 6.4 million modern sporting rifle owners by the 81 million American adults estimated to be gun owners. Taking  
 29 6.4 million and dividing it by 81 million equals 7.9%.

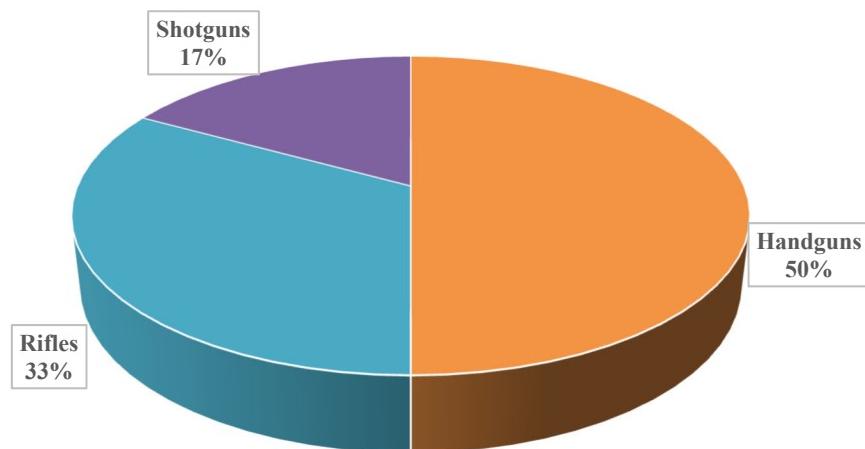
30       <sup>22</sup> The Census Bureau's total population estimate for 2022 is 333,287,557 persons. U.S. Census Bureau,  
 31 *Growth in U.S. Population Shows Early Indication of Recovery Amid COVID-19 Pandemic* (December 22, 2022),  
 32 available at <https://www.census.gov/newsroom/press-releases/2022/2022-population-estimates.html#:~:text=DEC..components%20of%20change%20released%20today> (last accessed January 16,  
 33 2023). The finding that less than 2% of all Americans possess modern sporting rifles is calculated by dividing the  
 34 6.4 million modern sporting rifle owners by the 333 million persons in United States. Taking 6.4 million and  
 35 dividing it by 333 million equals 1.9%.

36       <sup>23</sup> NSSF, 2020, *supra* note 6.

37       <sup>24</sup> For data on the number of firearms manufactured, imported, and exported, by category of firearm, from  
 38 2000-2020, see ATF, *supra* note 6. For similar data covering 1986-1999, see ATF, *Firearms Commerce in the*  
 39 *United States: Annual Statistical Update, 2021*, available at <https://www.atf.gov/firearms/docs/report/2021-firearms-commerce-report/download> (last accessed January 16, 2023).

28. According to ATF data, handguns are the most common firearms in civilian circulation; not rifles, and most certainly not modern sporting rifles that qualify as assault weapons.

**Figure 13. Share of Firearms in Civilian Circulation in the United States, 1986-2020**



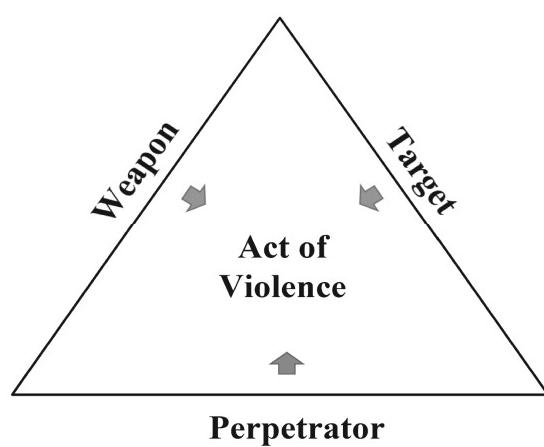
#### **F. Restrictions on Assault Weapons and LCMs Reduce the Incidence of Gun Massacres, Resulting in Lives Saved**

### F.1. Bans in Theory

29. As conceptualized in the Trinity of Violence model that I developed in my book on mass shootings, every act of violence involves three elements: a perpetrator, a weapon, and a target (Figure 14).<sup>25</sup> The key to mitigating violence is to “break the trinity” by hindering at least one of the three elements. This is accomplished by dissuading the potential offender(s), denying the potential instrument(s) of violence, or defending the potential victim(s).<sup>26</sup>

<sup>25</sup> Klarevas, *supra* note 1, at 27–29, 229–238.

26 *Id.*

**Figure 14. The Trinity of Violence**

30. Bans are law-based concepts that prohibit certain behaviors by criminalizing them.<sup>27</sup> Bans on assault weapons generally make it illegal to manufacture, import, transfer, own, or possess certain firearms. Bans work in relation to two of the three elements of the Trinity of Violence: dissuasion and denial. With regard to perpetrators, bans use the threat of criminal penalty to *deter potential offenders* from engaging in the prohibited behavior. In the case of bans on assault weapons, they threaten conviction, imprisonment, and/or fines should an individual manufacture, import, transfer, or possess a prohibited assault weapon. One mechanism at work here centers around dissuading potential shooters from trying to build or otherwise acquire banned firearm technologies. But another mechanism at work focuses on the assault weapon itself: *deprive potential instruments of violence*. Knowing that someone who is willing to commit murder might not be deterred from violating another criminal law, like possessing a prohibited item, bans on assault weapons also threaten punishment against anyone who tries to transfer (through sale, gift, or loan) a restricted item to someone who is prohibited from acquiring it. In essence, the former strategy seeks to dissuade the offenders and the latter strategy seeks to deny the instruments of violence.

<sup>27</sup> Philip J. Cook, *Research in Criminal Deterrence: Laying the Groundwork for the Second Decade*, 2 *Crime and Justice* 211 (1980); and Daniel S. Nagin, *Deterrence in the Twenty-First Century*, 42 *Crime and Justice* 199 (2013).

1       31. Ideally, someone intent on committing a mass shooting with an assault weapon  
2 would be dissuaded from going on a rampage by the fact that their means of choice are not  
3 available. In such a scenario, the attack would be quashed. This *suppression effect* is akin to what  
4 economists and psychologists refer to as a positive spillover effect, where one desirable outcome  
5 produces a second, loosely-related desirable outcome.<sup>28</sup> A real-world example of this is the so-  
6 called “Matrix Killings,” where a 19-year-old Virginia man blamed *The Matrix* film for driving  
7 him to murder his parents with a shotgun. At the time of the crime in 2003, the Federal Assault  
8 Weapons Ban was in effect, preventing him from obtaining an assault rifle. In a 2013 jailhouse  
9 interview, he told CNN, “If I had an assault weapon, things would have been much worse.” He  
10 added that had he had an AR-15 instead of a shotgun, he is positive that, after killing his parents,  
11 he would have gone on a rampage and “killed as many people as I possibly could.” As he noted,  
12 “because I didn’t have an assault weapon, that didn’t happen.”<sup>29</sup> In this case, the unavailability  
13 of an assault weapon due to the federal ban appears to have suppressed the perpetrator’s impulse  
14 to commit a mass shooting.

15        32. Of course, some potential mass shooters will not be discouraged from going on a  
16 killing spree just because their means of choice are unavailable. They will instead replace their  
17 desired instruments of violence with available alternatives. This is commonly referred to as the  
18 *substitution effect*, wherein an act of violence is still perpetrated, but with a different, less lethal  
19 instrument of violence.<sup>30</sup> A real-world example of the substitution effect at work is the 2019  
20 synagogue rampage in Poway, California. In that attack, the gunman appears to have been unable

<sup>28</sup> Paul Dolan and Mateo M. Galizzi, *Like Ripples on a Pond: Behavioral Spillovers and Their Implications for Research and Policy*, 47 *Journal of Economic Psychology* 1 (2015); K. Jane Muir and Jessica Keim-Malpass, *Analyzing the Concept of Spillover Effects for Expanded Inclusion in Health Economics Research*, 9 *Journal of Comparative Effectiveness Research* 755 (2020).

<sup>29</sup> Inside the Mind of a Killer, CNN (Transcripts), August 23, 2013, available at <https://transcripts.cnn.com/show/pmt/date/2013-08-23/segment/01> (last accessed January 24, 2023).

<sup>24</sup> Philip J. Cook, *The Effect of Gun Availability on Violent Crime Patterns*, 455 *Annals of the American Academy of Political and Social Science* 63 (1981); Anthony A. Braga, et al., *Firearm Instrumentality: Do Guns Make Violent Situations More Lethal?*, 4 *Annual Review of Criminology* 147 (2021), <https://www.annualreviews.org/doi/abs/10.1146/annurev-criminol-061020-021528>.

1 to acquire an assault rifle and LCMs due to California's ban on both. Instead, he acquired what  
 2 is known as a California-compliant semiautomatic rifle (which lacked features such as a pistol  
 3 grip and a forward hand grip) and 10-round magazines. As a result, the gunman quickly ran out  
 4 of bullets, and while pausing to reload—which appears to have been extremely difficult given  
 5 that he did not have assault weapon features on his rifle that facilitated fast reloading—a  
 6 congregant chased him away, preventing him from continuing his attack.<sup>31</sup> In this incident, which  
 7 resulted in one death, California's ban on assault weapons and LCMs worked exactly as  
 8 intended. It deprived the active shooter of the mechanisms that might have allowed him to kill  
 9 enough people to surpass the fatality threshold of a mass shooting. Stated differently, if you  
 10 examine data sets that identify shootings resulting in mass murder, you will not find the Poway  
 11 synagogue attack on their lists.

12       33. It might seem perverse to think that restrictions on certain instruments of violence  
 13 operate on the premise that, if an act of violence cannot be averted, then it will proceed with an  
 14 alternative instrument. Nevertheless, this is exactly how bans on assault weapons work in theory.  
 15 They suppress the inclinations of potential mass shooters to go on killing rampages in the first  
 16 place because their means of choice are unavailable. And, should deterrence fail, bans force  
 17 perpetrators to substitute less lethal instruments for more dangerous, prohibited ones, reducing  
 18 the casualty tolls of attacks when they do occur.

19 **F.2. Bans in Practice**

20       34. In light of the growing threat posed by mass shootings, legislatures have enacted  
 21 restrictions on assault weapons in an effort to reduce the occurrence and lethality of such acts of  
 22 firearm violence. Prominent among these measures was the 1994 Federal Assault Weapons Ban.  
 23 In September 1994, moved to action by high-profile shooting rampages that occurred the

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 25       <sup>31</sup> Elliot Spagat and Julie Watson, *Synagogue Shooter Struggled with Gun, Fled with 50 Bullets*, Associated  
 26 Press, April 30, 2019, available at <https://apnews.com/article/shootings-north-america-us-news-ap-top-news-ca-state-wire-8417378d6b934a8f94e1ea63fd7c0aea> (last accessed January 24, 2023).

1 previous year at a San Francisco law firm and on a Long Island Rail Road commuter train, the  
2 U.S. Congress enacted a ban on assault weapons (as well as LCMs) that applied to all 50 states  
3 plus the District of Columbia, bringing the entire country under the ban.<sup>32</sup>

4       35. Like the state bans on assault weapons that were implemented before it, the  
5 federal ban was aimed primarily at reducing mass shooting violence—an objective the ban  
6 sought to achieve by prohibiting the manufacture, importation, possession, and transfer of assault  
7 weapons and LCMs not legally owned by civilians prior to the date of the law's effect  
8 (September 13, 1994).<sup>33</sup> Congress, however, inserted a sunset provision in the law which allowed  
9 the federal ban to expire in exactly 10 years, if it was not renewed beforehand. As Congress  
10 ultimately chose not to renew the law, the federal ban expired on September 13, 2004. In the  
11 aftermath of the federal ban's expiration, mass shooting violence in the United States increased  
12 substantially.<sup>34</sup>

13       36. The legislative intent of the State of Washington in enacting the laws being  
14 challenged in the present case is similar to that of other legislative bodies that have restricted  
15 assault weapons: reducing gun violence, especially the frequency and lethality of mass shootings.  
16 Because, on average, the use of assault weapons results in higher death tolls in mass shootings,  
17 the rationale for imposing restrictions on assault weapons is to reduce the loss of life associated  
18 with the increased kill potential of such firearm technologies.

19       37. Currently, 32% of the U.S. population is subject to a ban on both assault weapons.  
20 The following is a list of the 11 state-level jurisdictions that presently restrict both assault  
21 weapons and LCMs: California (January 1, 1990); New Jersey (September 1, 1990); Hawaii

<sup>32</sup> Pub. L. No. 103-322, tit. XI, subtit. A, 108 Stat. 1796, 1996-2010 (codified as former 18 U.S.C. § 922(v), (w)(1) (1994)).

<sup>33</sup> Christopher Ingraham, *The Real Reason Congress Banned Assault Weapons in 1994—and Why It Worked*, Washington Post, February 22, 2018, available at <https://www.washingtonpost.com/news/wonk/wp/2018/02/22/the-real-reason-congress-banned-assault-weapons-in-1994-and-why-it-worked> (last accessed January 2, 2023).

<sup>34</sup> See sources cited *supra* note 11.

1 (July 1, 1992, assault pistols only); Connecticut (October 1, 1993); Maryland (June 1, 1994,  
 2 initially assault pistols but expanded to long guns October 1, 2013); Massachusetts (July 23,  
 3 1998); New York (November 1, 2000); the District of Columbia (March 31, 2009); Delaware  
 4 (June 20, 2022); Illinois (January 10, 2023); and Washington (April 25, 2023).<sup>35</sup> As a reminder,  
 5 from September 13, 1994 through September 12, 2004, the entire country was also subject to  
 6 federal ban on assault weapons.

7       38. In the field of epidemiology, a common method for assessing the impact of laws  
 8 and policies is to measure the rate of onset of new cases of an event, comparing the rate when  
 9 and where the laws and policies were in effect against the rate when and where the laws and  
 10 policies were not in effect. This measure, known as the incidence rate, allows public health  
 11 experts to identify discernable differences, while accounting for variations in the population,  
 12 over a set period of time. Relevant to the present case, calculating incidence rates across states,  
 13 in a manner that captures whether or not bans on assault weapons were in effect during the period  
 14 of observation, allows for the assessment of the effectiveness of such bans. In addition, fatality  
 15 rates—the number of deaths, per population, that result from particular events across different  
 16 jurisdictions—also provide insights into the impact bans on assault weapons have on mass  
 17 shooting violence.<sup>36</sup>

18       39. Since January 1, 1990, when the first state ban on assault weapons took effect,  
 19 through December 31, 2022, there have been 94 high-fatality mass shootings and 145 mass  
 20 public shootings in the United States (**Exhibits B and C**).<sup>37</sup> Calculating incidence and fatality  
 21 rates for this time-period, across jurisdictions with and without bans on assault weapons, reveals

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22       <sup>35</sup> The dates in parentheses mark the effective dates on which the listed states became subject to bans on  
 23 assault weapons.

24       <sup>36</sup> For purposes of this Declaration, incidence and fatality rates are calculated using methods and principles  
 25 endorsed by the Centers for Disease Control. See Centers for Disease Control and Prevention, *Principles of  
 Epidemiology in Public Health Practice: An Introduction to Applied Epidemiology and Biostatistics* (2012),  
 26 available at <https://stacks.cdc.gov/view/cdc/13178> (last accessed January 3, 2023).

27       <sup>37</sup> There were no state bans on assault weapons in effect prior to January 1, 1990. Therefore, January 1,  
 28 1990, is the logical starting point for an analysis of the impact of assault weapons bans.

1 that states that prohibited assault weapons experienced 46% and 16% decreases, respectively, in  
 2 the high-fatality mass shooting and mass public shooting incidence rates. They also experienced  
 3 54% and 37% decreases, respectively, in the high-fatality mass shooting and mass public  
 4 shooting fatality rates, regardless of the weaponry used by the mass murderers (Tables 6-7).<sup>38</sup>

5       40. When calculations go a step further and are limited to mass shootings involving  
 6 assault weapons, the difference between the two jurisdictional categories (non-ban states and ban  
 7 states) is even more pronounced. In the time-period between January 1, 1990, and December 31,  
 8 2022, accounting for population, states with assault weapons bans in place experienced 59%  
 9 fewer high-fatality mass shootings involving the use of assault weapons and 35% fewer mass  
 10 public shootings involving the use of assault weapons. Similarly, jurisdictions with bans in effect  
 11 experienced 68% fewer deaths resulting from high-fatality mass shootings perpetrated with  
 12 assault weapons and 58% fewer deaths resulting from mass public shootings perpetrated with  
 13 assault weapons (Tables 6-7).

14       41. All of the above epidemiological calculations lead to the same conclusion: when  
 15 bans on assault weapons are in effect, per capita, fewer high-fatality mass shootings occur and  
 16 fewer people die in such shootings—especially incidents involving assault weapons, where the  
 17 impact is most striking.

18       42. The main purpose of bans on assault weapons is to restrict the availability of  
 19 assault weapons. The rationale is that, if there are fewer assault weapons in circulation, then  
 20 potential mass shooters will either be dissuaded from attacking or they will be forced to use less-  
 21 lethal firearm technologies, resulting in fewer lives lost. The epidemiological data lend support  
 22 to the policy choices of the State of Washington that seek to enhance public safety through  
 23 restrictions on civilian access to certain firearms. While imposing constraints on assault weapons  
 24

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25       <sup>38</sup> For purposes of coding, between September 13, 1994, and September 12, 2004, the federal assault  
 26 weapons ban was in effect. During that 10-year period, all 50 states and the District of Columbia were under legal  
 conditions that prohibited assault weapons. As such, the entire country is coded as being under an assault weapons  
 ban during the timeframe that the federal assault weapons ban was in effect.

1 will not prevent every mass shooting, the data suggest that legislative efforts to restrict such  
 2 instruments of violence should result in lives being saved.

3 **Table 6. Incidence and Fatality Rates for High-Fatality Mass Shootings, by Whether or**  
 4 **Not Assault Weapons Bans Were in Effect, 1990-2022**

	Annual Average Population (Millions)	Total Incidents	Annual Incidents per 100 Million Population	Total Deaths	Annual Deaths per 100 Million Population
All High-Fatality Mass Shootings					
Non-AW Ban States	159.2	64	1.22	673	12.81
AW Ban States	137.1	30	0.66	264	5.84
Percentage Decrease in Rate for AW Ban States			46%		54%
High-Fatality Mass Shootings Involving Assault Weapons					
Non-AW Ban States	159.2	23	0.44	333	6.34
AW Ban States	137.1	8	0.18	92	2.03
Percentage Decrease in Rate for AW Ban States			59%		68%

18 Note: Population data are from U.S. Census Bureau, “Population and Housing Unit Estimates  
 19 Datasets,” available at <https://www.census.gov/programs-surveys/popest/data/data-sets.html>  
 (last accessed January 3, 2023).

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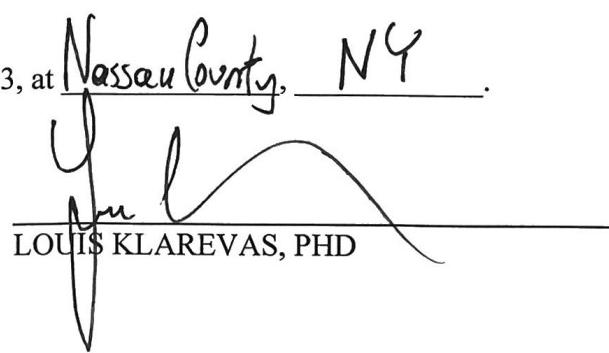
1           **Table 7. Incidence and Fatality Rates for Mass Public Shootings, by Whether or Not**  
 2           **Assault Weapons Bans Were in Effect, 1990-2022**

	Annual Average Population (Millions)	Total Incidents	Annual Incidents per 100 Million Population	Total Deaths	Annual Deaths per 100 Million Population
All Mass Public Shootings					
Non-AW Ban States	159.2	84	1.60	694	13.21
AW Ban States	137.1	61	1.35	375	8.29
Percentage Decrease in Rate for AW Ban States			16%		37%
Mass Public Shootings Involving Assault Weapons					
Non-AW Ban States	159.2	27	0.51	325	6.19
AW Ban States	137.1	15	0.33	119	2.63
Percentage Decrease in Rate for AW Ban States			35%		58%

16           Note: Population data are from U.S. Census Bureau, "Population and Housing Unit Estimates  
 17           Datasets," available at <https://www.census.gov/programs-surveys/popest/data/data-sets.html>  
 18           (last accessed January 3, 2023).

19           I declare under penalty of perjury under the laws of the State of Washington that the  
 20           foregoing is true and correct.

21           DATED this 22<sup>nd</sup> day of May, 2023, at Nassau County, NY.  
 22



23           LOUIS KLAREVAS, PHD

1                   **DECLARATION OF SERVICE**

2                   I hereby declare that on this day I caused the foregoing document to be electronically  
3                   filed with the Clerk of the Court using the Court's CM/ECF System which will serve a copy of  
4                   this document upon all counsel of record.

5                   DATED this 22nd day of May, 2023, at Seattle, Washington.

6                   *s/ Andrew R. W. Hughes*

7                   ANDREW R.W. HUGHES, WSBA #49515  
8                   Assistant Attorney General